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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,465	04/09/2004	William A. Burkland	21901-07984	1071
758	7590	12/27/2004	EXAMINER	
FENWICK & WEST LLP SILICON VALLEY CENTER 801 CALIFORNIA STREET MOUNTAIN VIEW, CA 94041			NGUYEN, LINH V	
			ART UNIT	PAPER NUMBER
			2819	

DATE MAILED: 12/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/821,465

Applicant(s)

BURKLAND ET AL.

Examiner

Linh V. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10, 14, 15 and 19 is/are rejected.
- 7) ☒ Claim(s) 4-9, 11-13, 16-18, 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/01/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to application No. 10/821,465 filed on 04/09/2004. Claims 1 – 20 are pending on this application.

Information Disclosure Statement

2. The information disclosure statement filed on 06/01/04 has been considered.

Drawings

3. The drawings filed on 04/09/2004 are acceptable subject to correction of the informalities of Fig. 2. Formal drawing of figure 2 is required in response to this office action.

Claim Objections

4. Claim 11 is object because there is no antecedent basis for the wording, "the second digital output signal" from its independent claim 1. There is not reference to "the second digital" earlier in the claim either in the form of an implied as well as a literal description from which an earlier antecedent reference may be made. Although, the disclosure does make reference and association to a second digital output, there is no clear recitation in these claims to avoid possible confusion as to what is actually claimed.

"the second digital output" on line 2 of claim 11 needs to be changes to - - a second digital output - -

Appropriate correction is required.

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 10, 14, 15 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Rangan et al. U.S. Patent No. 6,147,634.

Regarding claim 1, Fig. 2 of Rangan et al. discloses a system (40) for filtering an analog input signal (66) using a digital filter (12) and analog feedback (72) comprising: a signal combiner (50) for producing an analog output signal (output of 50) based upon an analog input signal (66) and one or more analog feedback signals (72), the signal combiner (50) having at least one input for receiving the analog input signal (66) and the one or more analog feedback signals (72), and an output (output of 50) for outputting the analog output signal; an analog-to-digital converter (46) for converting the analog output signal into a digital data stream ([70] Col. 3 lines 53 – 55) , the converter (46)

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being communicatively coupled through (42, 44) to receive the analog output signal from the signal combiner (output of 50) a digital signal processing unit (12) for filtering the digital data stream (70) being communicatively coupled to receive the digital data stream from the converter (46) and to send at least one digital output signal (Output of 12) to an analog feedback module (14) for producing the one or more analog feedback signals (72) based on the at least one digital output signal (70); and the analog feedback module (14) being communicatively coupled to send the one or more analog feedback signals (72) to the at least one input of the signal combiner (50).

Regarding claim 2; wherein the analog-to-digital converter is a sigma-delta modulator (Col. 3 line 27 - 28).

Regarding claim 10, Fig. 2 of Rangan et al. further discloses wherein the feedback module (14) having a first digital to analog converter (14 DAC) for converting the first digital output signal (output of 12) to a first analog feedback signal (72), the first converter (14 DAC) being coupled to receive the first digital output signal (Output of 44) and being coupled to send the first analog feedback signal (72) to the at least one input of the signal combiner (50).

Regarding claim 14, Fig. 2 of Rangan et al. discloses method for filtering an analog input signal (66) using a digital filter (12) and analog feedback (72, 74) comprising: producing an analog output signal (output of 44; Col. 3 lines 49 – 52) based upon an analog input signal (66) and one or more analog feedback signals (72, 74); converting the analog output signal into a digital data stream (Col. 3 lines 53 – 55); applying a first digital transfer function (Connection line from 70 to 10) to the digital data

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stream (70) resulting in a first digital output signal (the digital input signal of 10 is the first digital output from 70); and converting (14) the first digital output signal to one of the one or more analog feedback signals (72).

Regarding claim 15, Fig. 3 of Rangan et al. further comprises applying a second digital transfer function (Connection line from 70 to 48) to the digital data stream resulting in a second digital output signal (the digital input signal of 48 is the second digital output from 70).

Regarding claim 19, Fig. 3 of Rangan et al. discloses a system for filtering (12) an analog input signal using a digital filter (12) and analog feedback (72) comprising: means (42, 44) for producing an analog output signal (output of 44; Col. 3 lines 49 – 52) based upon an analog input signal (66) and one or more analog feedback signals (72, 74); means (46) for converting the analog output signal (output of 44) into a digital data stream (Col. 3 lines 53 – 55); means (12) for digitally filtering the digital data stream resulting in a first digital output signal (output of 12); and means (14) for converting the first digital output signal (output of 12) to one of the one or more analog feedback signals (72).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable Rangan et al. as applied to claim 1 above, in view of Subramanian U.S. Patent No. 6,611,570.

Rangan et al. as applied to claim 1 above, fails to disclose wherein the filter is implemented using mixed-signal complementary metal oxide semiconductor (CMOS).

Fig. 1 of Subramanian discloses a digital filter (14) for analog to digital converter (12); wherein the filter 12 implement using mixed-signal (output of 13) complementary metal oxide semiconductor (CMOS).

Rangan et al. and Subramanian are common subject matter of digital filter for Analog to Digital converter. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implementing the digital filter of Rangan et al. with the mixed-signal CMOS digital filter taught by Subramanian because digital filter implemented by mix-signal CMOS are standard and well know to one ordinary skill in the art (taught by Subramanian on Col.1 lines 34 – 35 and Fig. 1).

Allowable Subject Matter

10. Claims 4 – 9, 11 – 13, 16 – 18 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 4, in addition to other elements in the claim, the prior art does not teach or suggest the transfer function of digital process unit having a first integrator communicatively coupled to receive the digital data stream from the converter for generating a first digital output signal; and a second integrator communicatively

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coupled to receive the first digital output signal from the first integrator wherein the second integrator generates a second digital output signal.

With respect to claim 11, in addition to other element in the claim, the prior art does not teach the analog feedback module having a second digital to analog converter for converting a second digital output signal to a second analog feedback signal coupled to the input of the signal combiner.

With respect to claim 16, in addition to other element in the claim, the prior art does not teach the first digital transfer function is a second order bandpass filter transfer function.

With respect to claim 17, in addition to other element in the claim, the prior art does not teach the second digital transfer function to the is a low-pass filter transfer function.

With respect to claim 18, in addition to other element in the claim, the prior art does not teach generating the first digital output signal as a first carry out signal in two's complement form and generating the second digital output signal as a second carry out signal in two's complement form.

With respect to claim 20, in addition to other element in the claim, the prior art does not teach means for generating first and second analog feedback signals; wherein the first and second analog feedback signals is feed to the inputs of the means for generate the analog signal.

Cited References

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references are digital process unit for analog-to-digital converter.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linh Van Nguyen whose telephone number is (571) 272-1810. The examiner can normally be reached from 8:30 – 5:00 Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Michael Tokar can be reached at (571) 272-1812. The fax phone numbers for the organization where this application or proceeding is assigned are (703-872-9306) for regular communications and (703-872-9306) for After Final communications.

12/19/2004

Linh Van Nguyen



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